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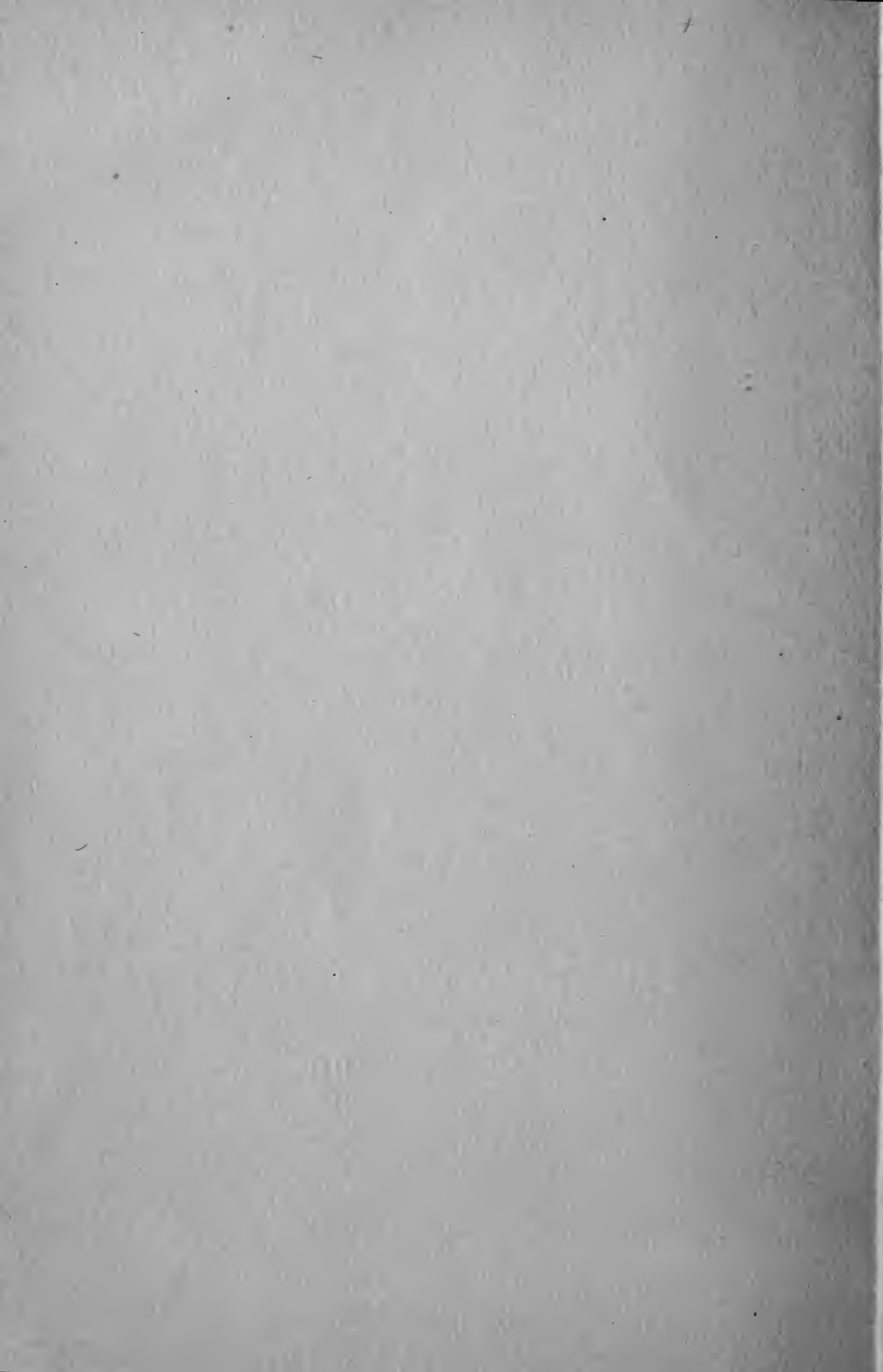
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THE
STATE UNIVERSITY OF IOWA
IOWA CITY



GRADUATE STUDY

AN ADDRESS BY
CARL EMIL SEASHORE
DEAN OF THE GRADUATE COLLEGE



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THE
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IOWA CITY



GRADUATE STUDY

AN ADDRESS DELIVERED TO THE STUDENTS
IN THE COLLEGES OF IOWA IN 1909

BY

CARL EMIL SEASHORE

DEAN OF THE GRADUATE COLLEGE OF
THE STATE UNIVERSITY OF IOWA

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ISSUED TWENTY-ONE TIMES DURING THE ACADEMIC YEAR; MONTHLY FROM
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GRADUATE STUDY

The times are changing. Progress seems to be the normal condition. We accept the ocean liner, the express train, the electric kitchen, wireless telegraphy, scientific agriculture, political readjustment, and the development and application of science and art in every field as a matter of fact. We are accustomed to great advancements and expect them.

Let me direct your attention to some aspects of the educational progress which is going on in our midst at the present time. It is difficult to realize its magnitude because we are right in the whirl of it. It is difficult for us to see the woods for the trees.

Among your acquaintances of the educated class in Iowa, the age of marriage has advanced by from three to six years within the present generation. Let us see why.

A few years ago a graduate from high school was qualified to teach in the high school immediately upon graduation, and was then ready to settle down. A little later the high schools demanded that their teachers should have a two-years normal school training. This was gradually pushed to three, and at the present time there is a very strong sentiment in favor of requiring four years, or a complete college course, as a preparation for teaching in the high school. And not enough with that, but now comes the report by the Association of American State Universities in its attempt to define what shall constitute a standard University and says, among other things, "that a standard University shall have as entrance requirement the preparation from a four year high school in which all of the teachers are college graduates, or show evidence of an equivalent preparation." And it is recommended that they should have the masters degree or its equivalent.

And that is not unreasonable; yet it means an addition of five years to the preparation of a high school teacher above what it was when we were children.

The girl who expects to marry the high school teacher has

to wait five years longer than her mother did, and probably needs those five years to prepare herself for her social position.

Some of the ablest and most distinguished professors in our universities and colleges are men who have had nothing but a college preparation. Until quite recently a man who had graduated from the college could teach in the college and was ready to settle down in a learned community. Now a fresh bachelor of arts (who by the way is very much better prepared than his father was in his college) is not prepared for anything in the learned world higher than the high school. To enter a profession he has from two to four years in the professional school. To teach in the college, after this, he must have had from one to three years of graduate study, and to teach in the university, he must have produced something giving evidence of his ability to be a leader in science, literature, or art. There is an increase, within our generation, of from one to five years in the preparation required for a teacher in the college or in the university, not counting the raising of the standard of the undergraduate course, which in itself amounts to from one to two years.

The girl who is preparing to be a professor's wife must have the virtue of constancy if she has to wait faithfully all these years; but boys, do not worry; she will wait, because, to fill her position in the home, she needs a fairly corresponding time of preparation.

Many of us can recall the time when Iowa was an open missionary field. The ministers led a life of sacrifice. Piety had not yet made acquaintance with learning. Things are changing. The leading denominations now require three years in the theological seminary, and this is based upon a four-years college course, which is based upon a four-years high school course. But not enough with that; the church of today is undergoing a greater transformation than that which took place at the time of the reformation. It does not seem so great to us because we are right in the current, and because it is a purely spiritual change. The church today is being re-organized on the basis of history, psychology, and sociology. The minister has to fight the devil with new weapons. He has

to face and fashion the forces of freedom, intelligence and progress. The minister of the future will be, as the minister of a century ago was, the learned man of the community, but on an entirely different plane.

Complimentary degrees are not going to be given so freely in the future as they have been in the past. To get the degree of doctor of divinity, doctor of literature, or doctor of philosophy, which the influential minister of the future must have the equivalent of, he must go to the fountains of learning and, after his high school, after his college, after his seminary course, settle down to work in history, psychology, sociology, and the science of religion.

And his wife must be his complement in learning. They will not marry at the age of twenty-one.

Many of the greatest lawyers and statesmen of our times had no high school course, or its equivalent, no college course, no professional school training. Prospective lawyers, how many of you are going to prepare for the presidency by splitting rails? Even Lincoln could not do it today. Six months in the office of the Justice of Peace represents the schooling of many of our able lawyers today. But now three years in the law school based upon the minimum of four years in the high school is required, and the ambitious man does not enter the law school until after he has completed a college course, and the man who aims to excel will not stop short of a few years of post graduate study after the law course. Today the corporation lawyer, e. g., must have expert and first hand knowledge of economic laws, social forces and institutional ideals. These he does not get in the law course. He may gather them through twenty years of rough and tumble experience, or he may get them in a systematic way through specialized research in graduate work. The same is true of the criminal lawyer and the constitutional lawyer.

I have in mind as an illustration of this a man who graduated from one of the small colleges of this state. He came to the Graduate College in our University and studied philosophy and sociology before he went into the law school. When he graduated from the law school, he was taken into the

office of the best law firm in Boston and soon after was appointed to professorship in the professional school at Harvard.

The lawyer who is to have cultured and well informed clients must prepare to measure up with them in specialized knowledge and general information. This will take time. The prospective queen of his hearth must have patience and must keep busy for she needs every moment to prepare herself for the social station in life which he has marked out for her.

Few of the heads of our banks today have had high school or college training, not even a business course. Although to become a banker, it is necessary that even the richest and most learned men shall begin at the bottom and go through all the stages, there is a short cut to banking and that is through a specialized education for banking. There is a difference between a clerk, or teller, and a banker. A banker is one who sits in the inner office and applies his knowledge of history, economics, social psychology, and other sciences, to the legitimate manipulation of funds. The business college gives no adequate preparation, the college does not qualify him for this, he must have a more advanced mastery of technique of his profession. At Harvard there is a school of applied economics which requires a bachelor's degree for admission, and gives training in finance in the same way as a law school gives information about law. Every University has within it now more or less of a nucleus for such a school.

The licensed druggist today knows more about medicine than some of our best family doctors learned in their college days. Some of the physicians have gotten their training through two years at the patent medicine counter, and six months in an institution which conferred the degree of M. D. Now the physician must have a four year medical course and, even in the poorest medical schools, he must enter with a high school preparation. We now require two years of college study for entrance to the medical school in our University and in many places, a full college course is required. It is well known that the best men in every medical class are picked to go on in post graduate work as internes or assistants in the hospitals, or in the office of the specialist, and with this specializa-

tion comes the craving for liberal culture and sound scientific training which may be obtained through mature study as graduates.

This is the age of specialists. The college, and the four-years medical course, give no room for the specialization. The specialist must get both his specialized and his broad culture training after these courses. We demand that the man in whose hands we place our life shall have had the best opportunities for acquiring his profession.

It is hard for the girl at home to wait while he goes through college, and through the medical school, and takes his master's degree, and goes through the apprenticeship, and attends clinics in foreign countries; but her patience will be repaid. And if she is to be a mate to such a man she must keep busy every minute of the time that she is waiting.

The principal characteristic of the manufacturer as we know him is enterprise. Competition, the application of science, and the combinations of capital make it necessary that the manufacturer shall know the nicest details of the chemistry and physics of the process, the economic principles involved, even the laws of human nature, in order to manage his establishment. Electrical, mechanical, and other industries now employ experts in all sorts of capacities in manufacture. That kind of knowledge which shall pay in application to the reduction of ores, the manufacture of chemicals, the designing of machinery, etc., is not given in the undergraduate college. This is so true that we are accustomed to hear the manufacturer say that he does not care for the college trained man. And he is right, for the college course is not an adequate preparation, but the post-college, the mature student's investigations in the specialized laboratory, or in the field, can give just the specific preparation that the manufacturer wants, and in the near future will demand.

Who thinks of learned qualifications for government positions? We can scarcely think of the word government without thinking of the word graft, and yet government office is not all a matter of pull. In Germany the mayor has a profession.

He is a professional city mayor, i. e., he has taken extensive studies in history and theory of municipal government and law and has prepared himself for the office of mayor and may be elected in any city in the same way as we elect the principal of our schools. We shall soon learn from the successful experience of Germany in this respect. The civil service offices do not all go to the ward heelers. The examinations are growing more and more stringent for every government office.

The professor of mathematics in our University informs me that he could place a great many more mathematicians than he has to recommend, as statisticians, etc., in government service.

There is a bill in Congress at the present time to establish a national school for training of diplomats. The requirements upon the political servant are continually increasing and with this increase comes the development of facilities for his preparation.

In all good government there is a "power behind the throne." She does not pass any civil service examinations, but the practical, social test which she must pass before she is elected by the man who is to be prominent in public life is even more severe.

These illustrations may suffice to bear out my assertion that the times are changing, that in all the walks of life in this country there is a tremendous educational upheaval, and that it is all in one direction,—the direction of increase in the requirements and unprecedented opportunities for a high preparation for life.

After this outlook, let us look in upon the personal situation for a moment and make some observations. In the first place, you can not all be at the top. The pyramid of human achievement is like every other pyramid; it tapers toward the top and the top would be useless without the broad expanding base and all intervening strata.

We need teachers in all the grades from the lowest to the highest. We need college professors who are satisfied to teach and do not hang around heart-broken because they have no op-

portunity to advance science. We need the preacher who is indeed a minister in humbler walks of life. We need lawyers for clerkships, justices of peace, and in many business capacities. We need physicians who can handle the plain cases and are conscientious enough to send the serious cases to the proper specialist. We need the small enterprising man in commerce, manufacture, and industries. We need the humble citizen in public affairs at home.

But in all these lines we need a few at the top, and these we give special advantages, and hold responsible for greater results.

In the second place, you will observe that the nobility of work and calling may be just as great at one plane in the pyramid as at another. The primary teacher may very well carry her head as high as the college professor. She may rightly regard her mission in the world as one well worth while. The question of the steward is always: "How have you used the talents I entrusted to you?" But it is also true that as your talents are, so is your personal opportunity for preferment; and, as your talents are, so is your personal responsibility.

In the third place, I think, to most of us, the high places seem distant and beyond reach. This is perfectly natural, and has its real advantages. (One disadvantage of that is, however, that you have great difficulty in seeing the sense of what I am saying when I talk about that which lies beyond your present vision.) We are like the pioneer mountain climber. We may have vague notions of what lies ahead, but we cannot realize the full view until we gain new vantage grounds from which we look forward to the next higher and higher and higher.

In my own personal experience, this was strikingly so. I took one year of a preparatory course to prepare for teaching my own country school. I took another year to prepare a little better. I took three more years to prepare for teaching in the city school. I took another year to prepare better. I took another year to prepare for teaching in college. I took another year to prepare better. I took another year to prepare for teaching in the University. I took two years to prepare better, and thus from the moment I left the plow to the time I

had finished my fifth year as a graduate student in the University, there had been a slow broadening of the horizon; for each year my horizon had grown wider and wider and the whole field more full of joy. It is for the joy of a broad vision that I am here today to bring you this message, to cheer you on up to heights still undreamt of.

The best is not too good for you. The forty-niners went to California by prairie schooners and on foot, in any way they could drag themselves over there. They got there and it was the boast of their life. But if you want to go to California, you would take an express train. We honor our fathers who walked then, but if any of us should walk today we would be considered tramps or fools. Just so in the preparation for life. The express train is your method of travel today. You have unprecedented opportunities for making great distances in short time and with comparative comfort.

The express train of which I am speaking to you is graduate study. Let me tell you something about it. I am speaking about graduate study in general, not merely of the institution I represent. To be brief I shall simply enumerate some characteristics as I see them.

(1) Graduate study in this country is new. Harvard College and Yale College were changed into Harvard University and Yale University only a few decades ago. The present decade will go into history as the period of organization of graduate schools in the state universities. Our graduate college is only in its tenth year. Advanced studies have had a gradual growth from the early foundation of our universities, but, until of late, it remained largely individual enterprise among certain professors.

Although graduate study in this country is no older than the present generation, it is one of the most significant features of the extraordinary expansion which is now going on in science, literature, art, and industry.

The Graduate College is no more distant from the average citizen of Iowa today than the undergraduate college was to our fathers. Yet it is so new that few of us know anything about its opportunities and significance.

In 1818 George Bancroft, the historian, was sent to Germany as a graduate student from Harvard. He was probably the first graduate student from this country to receive a stipend and it is interesting to note that he profited by it; for, twenty years later, he sent a check for \$20,000 to the treasurer of Harvard University saying that he considered this suitable payment for the encouragement Harvard had given him in graduate study.

(2) Graduate study means research. Research means advanced investigations which carry our knowledge beyond present bounds. Graduate study is always liberal study, therefore its research is in science, art, or literature. Today research is the key to progress. Today research is the key to economy. Today research is the key to efficiency in all human efforts, and research is the business of the Graduate College.

The motto of the graduate student is zeal for research. We are accustomed to think of the man of science as a man without feeling. This is wrong. Edison goes into ecstasy over his triumphs and so does every man who makes real achievement in his pioneer work. The life of the scholar is a life of high pitched well-balanced enthusiasm.

(3) Graduate study begins after college. Many of the students who enter the Graduate College are not prepared for research. They may spend a year or two in orientating themselves within the field which they are about to investigate. The best preparation for graduate study in any subject is a broad college course in which science, literature, and art have been surveyed in a broad and sympathetic way. The attempt at research or high specialization within the college course is a farce.

(4) Graduate work is expensive to the institution. The Graduate College represents all the university equipment for advanced study and instruction in all the colleges of the university in so far as it is above the undergraduate or the strictly professional grade. It is therefore the most expensive. The laboratory apparatus used by a single research student may cost as much as the apparatus for the use of the whole class in an undergraduate course. The undergraduates are taught in large classes while the advanced students meet in small groups or work with the instructor individually. One instructor can

handle only a small number of students. In advanced courses which are highly specialized, the instructor cannot carry more than half as many hours as if he were giving only set undergraduate courses. The man who is capable of being a leader in his field of work, as the guide in research must be, usually commands double the salary of an undergraduate instructor. Much of his time must be spent in productive work—experimenting, writing, etc. Promoters of learning are founding fellowships ranging in value from \$100 to \$2500 a year in stipends for the encouragement of advanced students. Most universities give free tuition. The aim of the Graduate College is to discover and develop “the exceptional man.” It is also its business to discourage and suppress the unpromising candidate.

On the whole, the research student costs a university from five to twenty times as much as an undergraduate or a professional student per year. Yet in the long run he gives the university more than proportional returns.

The expense of graduate students sounds incredible. To take a specific case, as nearly as I can estimate it, I myself cost Yale University \$900 a year for each of the last two years I was a graduate student there. The fellowships and scholarships which we give to graduate students do not at all represent the financial advantages given.

(5) Graduate study is practical. We used to think of the scientific investigator as a recluse or a wizard far aloof from the ordinary affairs of life, but now he is in the public eye, the effective, well-known, well-paid, public servant, modeled after an Edison, a Burbank, or a Pasteur. Graduate study is now a proper preparation for all higher walks of life. It makes teaching a profession; it brings science into medicine; it broadens the specialized professions; it strengthens the pulpit; it organizes industry; it lays the foundations for invention and commercial production; it makes knowledge of human society the basis of government and public administration; it guides in the development of natural resources; it enriches literature; and it furnishes the highest opportunities for liberal culture. This is achieved through the pursuit of liberal studies and the advancement of science as such.

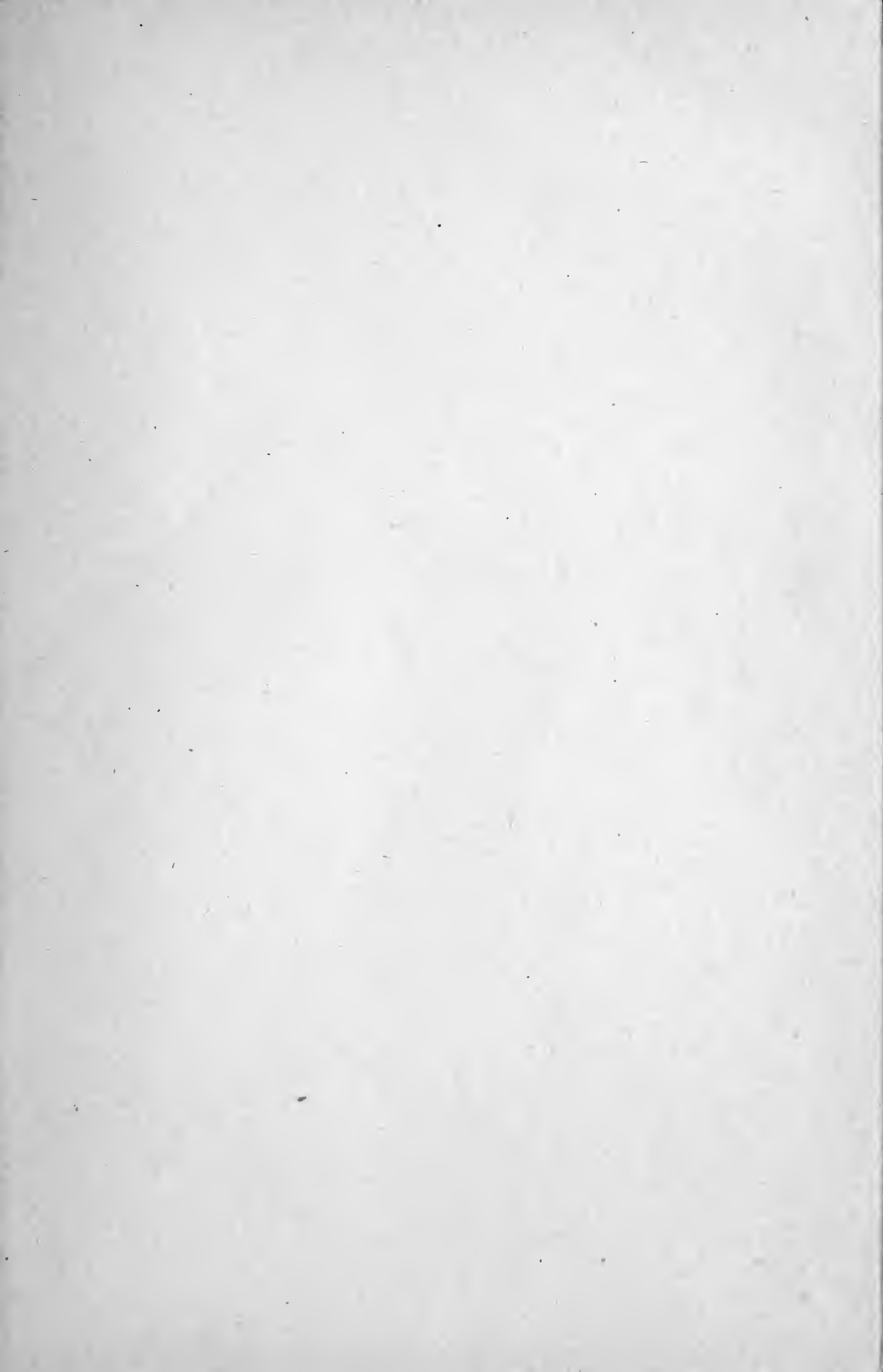
(6) Graduate study is farsighted. This is its chief merit

and distinguishing characteristic. The advanced student does not address himself directly to invention, manufacture, and the practice of art or profession, but gives himself to the study of fundamental principles which will be of service in his life work. In his enthusiasm, he is even in danger of taking the motto, "Truth for truth's sake." His work must be fundamental. If the investigator, who gave Marconi the principles of wireless telegraphy, had aimed directly at saving ships at sea, he would probably have failed; but he devoted himself to the mastery of an abstract principle and laid a large foundation. Countless achievements may be built upon this foundation.

(7) Graduate study stands for liberal culture. It is truth that sets us free; but, to free us, it must be just the truth we need. Culture in itself is no worthy aim. We must test culture by personal worth, by purpose in life, by service, by the ability to put oneself in the place of another. A genuine student does not merely "work for the Ph. D." He has a radically different aim. The degree is an incident.

We used to think that Latin and Greek were the marks of liberal culture. We now think that science and arts may also just as fairly be called liberal. We speak now of a college course in liberal arts and consider it a liberal course. If you have not yet discovered it, you may live to see that a college course will be regarded as simply a preparatory course, the foundation for liberal culture. The liberal feature comes after the college course.







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